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THE GREAT SEA-SERPENT.

The Great Sea-Serpent. An Historical and Critical Treatise. With Reports of 187 Appearances (including those of the Appendix), the Suppositions and Suggestions of Scientific and Non-scientific Persons, and the Author's Conclusions. With S2 illustrations. By A. C. Oudemans, Jzn. Published by the Author. October, 1892. (London: Luzac and Co.)

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separated by aqua regia. The residue consists of slate-grey hexagonal crystals of density 2'06 to 2'08, burning in a current of oxygen at 575 From 400° upwards it swells like mercury sulpho-cyanide. It is not attacked by fused nitrate of potassium, chromic acid, or hot sulphuric acid, but is rapidly attacked by warm iodic acid and fused sodium carbonate. The swelling up is attributed to the sudden liberation of heated gas due to the decomposition of a very small quantity of graphitic oxide produced under the influence of nitric acid at the expense of a trace of amorphous graphite mixed with the crystallised variety, and more
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ture on fixed dates during the second fortnight of January, by M. Dom D. Démoulin.-Destruction of trees and public health, by M. J. Jeannel.
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M. Lecoq de Boisbaudran.-The pancreas and the nerve centres regulating the glycemic function; experimental demonstrations derived from a comparison of the effects of a removal of the pancreas with those of bulbary section, by MM. A. Chauveau and M. Kaufmann. Medullary section, preceded or followed by bulbary section, produces exactly the same effects as medullary section preceded or followed by the removal of the pancreas. As regards, therefore, the physiological action exerted upon the sugar-forming apparatus, this last operation behaves exactly like the bulbary section. Now the latter determines the super-activity of the liver by suppressing the transmission of the influence of an inhibitory centre situated in the medulla oblongata. As a necessary result, the removal of the pancreas acts in an analogous way in producing hyper-glycemia and glycosuria. This operation amounts to the

annihilation of the centre controlling the glycogenic function. Hence the pancreas acts upon this function by exciting the activity of this inhibitory centre, and probably also by influencing the exciting centre, which is, on the other hand, checked in its activity by the products of internal pancreatic secretion poured into the blood. The results of the whole experimental investigation on the pathogeny of diabetes are embodied in sixteen propositions. On the distribution in latitude of the solar phenomena observed at the Royal Observatory of the Roman College during the fourth quarter of 1892, by M. P. Tacchini.-Photography of the solar corona apart from total eclipses, by M. George E. Hale.-On electric waves along fine threads; calculation of the depression, by M. Birkeland.-On initial capacities of polarisation, by M. E. Bouty.-Influence of frequency upon the physiological effects of alternating currents, by M. d'Arsonval.-Measurement of large differences of phase in white light, by M. P. Joubin. A new method of rendering visible the fringes produced by two interfering systems of waves consists in placing an anisotropic compensator upon both the groups which have traversed the interference apparatus. This compensator then receives polarised light which, before being analysed, passes through a plate of quartz with its principal section at an angle of 45° to the plane of polarisation. Such an arrangement has been carried out in one of Fizeau's apparatus for measuring expansions. It reads direct to of a micron.■
On spherical aberration of the human eye; measurement of senilism of the crystalline, by M. C. J. A. Leroy. The mean aberration is a function of the age which grows slowly in young people and very rapidly after mature age, tending towards a maximum in old age. The spherical aberration of the eye also depends principally upon the crystalline and notably upon the variability of its index of refraction. In young people this variability is rapid enough to sensibly correct the aberration. It decreases with age, and tends to a limiting value which it would have if the crystalline had a uniform index throughout. -Electrical crucible for the laboratory, with directing magnet, by MM. E. Ducretet and L. Lejeune.-On a phenomenon of dissociation of sodium chloride heated in presence of a wall of porous earth, by M. de Sanderval.-On hydurilic desoxyamalic acids, by M. C. Matignon. - Action of cotton upon sublimate absorbed in dilute solutions, by M. Léo Vignon. Influence of the alkalinity of blood upon the process of intra-organic oxidation provoked by spermine, by M. Alexandre Poehl.-Production of sugar diabetes in the rabbit by the destruction of the pancreas, by M. E. Hédon.-Improvement of potato-culture for industrial and forage purposes in France, by M. Aimé Girard-On the employment of ruthenium red in vegetable anatomy, by M. Louis Mangin.-Permian fish fauna in France, by M. H. E. Sauvage.-On the manifestation, for more than six hundred years, of sudden variations of tempera- Books, Pamphlets, and Serials Received
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WE are glad to hear that Mr. J. J. Wild, l'h.D., who ac. companied the Challenger as secretary to the Director (Sir Wyville Thomson) and artist to the Expedition, is settled in Melbourne, Victoria, where he is engaged in producing plates illustrative of the zoology and paleontology of the colony, under the direction of Sir Frederick MacCoy, F.R.S. He is at present figuring the fossil remains of Acanthodian fishes discovered in the Old Red Sandstone of Mansfield, Victoria.

THE programme of the first series of summer excursions of the Manchester Field Naturalists' Society has just been issued. Mr. Leo Grindon, the founder of the Society thirty-two years since, has been compelled, by advancing years and impaired health, to resign the presidential chair, which Mr. Chas. Bailey has undertaken to occupy. Mr. Grindon retains the office of botanical referee, with the assistance of Mr. W. Gee, who is engaged in teaching natural history subjects under the Science and Art Department. A special study, appropriate to the season and locality, is appointed for each meeting; and

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the Society, is in preparation. A course of lessons, treating detail of the leading natural families of the Manchester Flock being given in the city.

Ar the meeting of the Royal Statistical Society on Tonday, Mr. R. Henry Rew read a valuable paper on the antica of the production and consumption of milk and milk products in Great Britain. The subject, as he pointed out, is one of extremt complexity. The effective production of milk by a single com ranges from nil (in the case of a cow which only rears her call to 1200 gallons or more. The number of cows and bellen re turned in 1890, the year taken as a basis for calculation, va 3,956,220, of which it is reckoned that 3.544. $75 are producture Returns now collected from a large number of districts, together with other data, justified an estimate of 400 gallons per c 'making the total quantity of milk available for consumption in Various forms in the United Kingdom 1417 million gallons The number of cows has decreased in proporuon to population In Great Britain there were in the period 1866-70 821 cows per 1000 of population, while in 1886-90 there were only 77'9. The absolute number of cows had increased, but not sufficiently b keep pace with the growth of population. The latest retur (for 1891) is more encouraging, showing as it does the large number of cows on record. In Ireland the period 1886-9 showed a higher proportion (2908) of cows to population than in any of the four preceding quinquennial periods, but this was due not to an increase in the number of cattle, but to th decrease of population. The 1417 million gallons of milk pro duced in the United Kingdom is thus accounted for :-Consumed. as milk 570 million gallons; butter, 617 million gallons (repre

senting 105,000 tons of butter); cheese, 224 million gallos (representing 100,000 tons of cheese); miscellaneous (condensed milk, &c.), 6 million gallons. Mr. Rew admitted that the results arrived at were only tentative. He expressed a hope that befor long some official help might be given in the solution of 1 problem which was of the deepest interest to statisticians agriculturists, and social economists.
year.
THE Bath and West of England Society decided some time ago to appoint a research chemist to make investigations apa the making of cheddar cheese. Mr. Fred. Jas. Lloyd w chosen to fill this post, and he has recently presented his report of the work done in August, September, and October of last The results obtained, though by no means complete, art both valuable and interesting, and it is to be hoped that t Society will continue and extend the work. The experiment were made at the Society's Dairy School, near Frome, and was found possible to make a cheese in such a way as to be guided in judging the condition of the curd by determinations of acidity alone The product was a decided success in every respect. The average acidity of the mixed milk before adding rennet was 24 per cent., but on setting the whey only showed 16 per cent. of lactic acid. It was proved, by continued exper ment, that when the whey showed a percentage of acidity slightly greater than that in the milk before renneting the pro cess was sufficiently advanced to draw off the whey and pile the curd. Determinations of acidity in the later stages of manuhe ture have yielded similar results, and it appears to be certa that the careful development of definite amounts of lactic and at definite steps in the process is essential to success. The bacteriological observations show that, although, very m organisms are liable to get into the milk, the majority of them are not able to exist in an acid material, consequently insuring a proper development of acidity in the card we destro their activity, which would otherwise spoil the cheese. Not o does the Bacillus acidi lactici play the most important part the making of the cheese, but it is also the chief agent i ripening process

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PUBLIC HEALTH.

A Treatise on Public Health and its Applications in Different European Countries. By Albert Palmberg, MD Medical Officer of Health for the County of Helsingfors in Finland. Translated from the French edition, and the section on England edited by Arthur Newsholme, M.D. (Lond.), D P.H., Medical Officer of Health for Brighton (London: Swan Sonnenschein and Co., 1893-)

ETHOUGH scarcely more than a year has elapsed since the issue of the Swedish edition of this work, translations of it have already appeared in French, English, and Spanish. A book which within so short an interval has attained to such a pitch of popularity may be admitted to have practically established its claim to rank amongst the important contributions towards the literature of the subject with which it is concerned. Ex-
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country the author is nevertheless able to introduce a mass of detail relating to practical sanitation which we believe would be looked for in yain even in our standard text-books on hygiene. We may instance as examples of this the paragraphs on the scavenging of London, and the disposal of rubbish and street refuse; the description of the préventive measures adopted in this country, for the limitation of the spread of infectious disease, together with an account of the ambulance service and hospital ships the explanation of the methods adopted for the ventilation of some of our important public buildings; the excellent résumé of school hygiene, for which we have no doubt the author is deeply indebted to Dr. Newsholme ; and the summary on industrial hygiene, although the author is rather inclined to repeat many of his remarks under this head when describing "the sanitary provisions as to industries- Dr. Palmberg's admiration of English sanitation is pronounced, and in commenting on our appreciation of the beneficent results of good ventilation, we find him giving vent to the quaint statement that "even in cold weather the windows of high houses are opened, children and adults without fear of chill breath-ing the pure air"!

France, the author informs us, has no general sanitary law, most of the sanitary regulations in force consisting of ministerial decrees, orders of prefects and councils of health. Corresponding to this laxity of sanitary control, the great sanitary improvements which have been from time to time introduced have not been followed in Paris by a continuous fall in mortality, as in the case of the other European capitals. As the author very rightly remarks, the time is past when it can be supposed that good sense and administrative capacity merely suffice for the regulation of the Public Health. The drainage of Paris is exhaustively treated, the sewerage of the town being dealt with in detail, the writer in the course of his description pointing out that the system in use is objec-tionable, inasmuch as it allows deposits of sand to occur,

and necessitates the maintenance of an army of 850 men to keep the sewers clear, the workers themselves at the same time having a relative mortality from typhoid fever twice as great as that for all Paris. Moreover, owing to the friction of the enormous deposits of sand in the sewers the wear and tear on the latter are great, and compel frequent repairs.

The sanitation of Germany and Austria is dealt with in the same thorough spirit as pervades the rest of the book and calls for no special remark.

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Scotland, France, Germany, Austria, Sweden, and Finland are detailed; but the description of the Public Health service of Russia, Denmark, Norway, Holland, and Italy Not having visited these countries, and is omitted.

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"meteoric stones," and showed the immense num
of facts that he had found out about them. I
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rindled, the sea-serpents "are very shy, and it is
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taneous photographs of the animal will alone cons
ologists, while all their reports and pencil draw
will be received with a shrug of the shoulders
latter sentence, which precedes the preface, make-
shudder at the amount of "reports and pencil drawr.
contained in the six hundred following pages.
And yet, perhaps, this work is not altogether with
its value. From the middle of the sixteenth century-w
Olaus Magnus wrote about "a very large serpent
length of upwards of 200 feet and twenty feet in diame
which lived in rocks and holes near the shore of Berg
until this very present hour all sorts and mars
of gigantic forms have been reported abo
sailors and others, and even pencil drawings of
have been made, and the collecting together and print
of such a series of records forms as strange a chapte
the science known by the people as has ever made
appearance.
There is but little necessity of insisting on the
of experience in seeing ere one can describe wh
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what one correctly sees so that the description
be applicable, nor need one wonder that such

of seeing and' describing were not to be found
in the many seagoing worthies whose extraor
narratives crowd the pages of this volume. Be
to say about the capacity for be
be found in the compiler of this work, who
cludes his task by naming a form he has never
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that a Phylogenetic table, which he gives, "will
practical manner show the rank which, in my o
sea-serpents occupy in the system of nature":
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This volume contains an account of the "literatur
a detailed record
the subject of sea-serpents;
of various accounts and reports concerning observation
the sea-serpents chronologically arranged and thor
discussed and criticisms on the papers written
same subject; next the various explanations
of given, and lastly the author's own conclusions-i
divides into "fables, fictions, exaggerations and
and what he is pleased to call "facts." Among t
tions he regards the belief that the sea-serpent
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land"; among the exaggerations that it has a to
a hundred and fifty feet in length"! among the
"that there are two species of sea-serpents, or that
are several species of them all belonging to the
genus"; or that "it ever takes [mistakes] a bo
of the other sex."
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1893.

and Papers from Paradise Lost, where the great leviathan is mentioned as being the special dread of the Norwegians (the coast of Norway being the favourite haunt of the monster according to the most reliable eye-witnesses). But why is Coleridge left out?

"Beyond the shadow of the ship,
I watched the water snakes.
They moved in tracks of shining white,
And when they reared the elfish light
Fell off in hoary flakes."

Later on, we come upon another picture of a sailor being cut off in his prime by the wily monster, and we pass on with considerable relief to Dr. Oudemans' "Conclusions," where, under the headings of "Harmlessness, Timidity, and Playfulness," we learn that the great sea-serpent is, after all, a mild creature, a conviction probably deduced from the fact that, if the great sea snake has ever shown his animosity to the unwary invaders of his haunts, no victim has, so far, survived to tell the tale.

It is sad, however, to find that Dr. Oudemans' great sea-serpent is, after all, only a monster sea-lion, and we don't know of his having done anything to justify Dr. Oudemans' calling him Megophias megophias (Raf.), Oud.

L. B. P.

HANDBUCH DER PALEONTOLOGIE.-Palæozoologie, vol. iv., pt. i. Edited by K. A..

Zittel. 8vo. Pp. 304. Illustrated. Munich and Leipsic: R. Oldenbourg, 1892.

WE are glad to congratulate Professor Von Zittel on the untiring energy which has enabled him to get well into the Mammals in the present fasciculus of this magniñcent and invaluable work. It need hardly be mentioned that the whole of the Vertebrate portion of the work has been written by the Editor himself; and the present fasciculus is fully equal to its predecessors in the care and attention

FIG. 1. Palatal view of the skull of Mylodon.

which has been bestowed upon it, and in the excellence of the illustrations. Three of the latter we are enabled to reproduce as samples. We are especially glad to notice that the author has devoted particular attention to the recent important discoveries which have been made among the fossil mammals of South America, and that a host of new forms have been assigned to their proper serial positions. This is the more creditable to the author, seeing that owing to unfortunate circumstances the vertebrate palæontology of that country

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BOOKS.

vo. Pp. viii. and 256. Illustrated.

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mode of life, of the Black Vulture, the Upland Goose, and the Crested Tinamou, as well as of several of the smaller birds. Perhaps the most generally interesting chapter in the whole book is that Bird-music," in the course of which the author points out how impossible it is to convey any adequate idea of the songs of birds by mere description. He illustrates this by mentioning that before he had ever visited England he was anxious to obtain some idea of the

nature of the melody of the British songsters, but that all his efforts were in vain. And the description of his delight at first hearing the music of our English fields and groves ought to remind us all how little we really appreciate, as a rule, the natural charms of our own land. Possibly some further development of the phonograph may be the ultimate means by which "Bird-music
may be rendered
comprehensible to those who cannot hear it at first hand, as we
method.
greatly doubt if this can ever be effected by any merely graphic
Of scarcely less interest is the author's description of the ways of the leaf-bearing ants, on pp. 140-141; while those whose special study is Mammals will not fail to notice the observations on the burrowing Tuco-tuco (Ctenomys) and the Mara (Dolichotis). As the author well remarks, it is very curious to find in a burrowing animal the eyes of so large a size as they are in the former of these two rodents.
In commending this book to the attention of our readers, we may express a hope that it will ere long be followed by others from the same ready pen.
R. L.
THE GREAT SEA-SERPENT: An Historical and Critical '1 reatise.
With the reports
of 187 appearances (including those of the appendix), the suppositions and suggestions of scientific and non-scientific persons, and the Author's conclusions.
October, 1892.
With 82 illustrations. By A. C. Oudemans, Jzn. Published by the Author,
London Luyac & Co.
other by a literary contributor.
Of this work we give two reviews, the one by a naturalist, the
meteoric stones.
I.
THE author in his preface compares his work with that of Chladni on
Chladni, he says, opened the eyes of unbelievers by
nineteenth century.
collecting and comparing all accounts of meteoric stones up to the
Meteoric stones were again found and were
proved to be quite different from terrestrial stones. Unfortunately for the argument, remarkably few sea-serpents have been caught, and
objects.
those few have proved to be not at all different from well-known
We confess to have found Oudemans' book exceedingly dul
reading. 379 pages are devoted to genuine or invented accounts of various appearances; 110 to explanations hitherto given. No doubt it is useful to have the literature of the subject compiled, but the author might have contented himself with a much greater compression
and fishermen, and so forth.
of the interminable newspaper discussions, evidence on oath of sailors
We do not see that he advances at all
"Encyclopædia Britannica.
beyond Mr. Hoyle's bright and short account of the sea-serpent in the
A number of the records are pure
myths; some others are due to mistaken observations of floating sea-

weed; porpoises swimming in a row; basking sharks, and so forth. The persistent records from the Norwegian coasts are most probably explained by the existence of gigantic cuttle-fish; and there remains

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a residuum which quite possibly may be explained by the discovery of some new animal. Oudemans' own theory is given with a considerable amount of confidence, in some 50 pages towards the end of the book, and on page 516 an ideal sketch of the animal is produced. It is a Pinnipede to be called Megophias megophias (Raf.), Oud.; and a phylogenetic table of its relations with other Pinnipedes, living and extinct, is given. It is very possible that a large Pinnipede may exist, but, on carefully going through the characters suggested for it by this author, it is difficult to see that he has been guided in his selection from reports by any sounder principle than relying on what appeared to suit his hypothesis, and rejecting or explaining away inconvenient ones. Further notice of this book I leave to a literary contributor.

II.

P. C. M.

THE attitude of the nineteenth century, social as scientific, towards the unknown may be summed up by the remark made by a lady member of the upper ten concerning those less happily situated in the social scale "I don't know them they don't exist." In the face of this attitude Dr. Oudemans has presented the public with a treatise of no less than 592 pages on our old friend the sea-serpent. We are warned on the title-page that the little volume contains reports of 187 appearances, "including those of the appendix," but we are not told what the appendix of the serpent is, and there are no special reports on appearances of his tail. The author much deplores the fact that his illustrations are not due to the unlying kodac. Nevertheless. the reader does not lose by this little omission in the baggage of observant travellers. It has been the means of providing portraits of the sea-serpent such as we feel assured no camera yet invented could have produced. The most impressive of these is one compiled by Messrs. Renard, père et fils, who combinedly took observations one moonlight night during a voyage on the high seas in 1881. The result is the portrayal of a dragon worthy the sublimest efforts of Sir Augustus Harris. We fancy even our own patron saint would have quailed before it, unless, indeed, following the advice given by Dr. Oudemans, he had armed himself with "explosive balls and harpoons loaden with nitro-glycerine." This particular specimen possessed not only teeth, "sharp, enormous, and white," but a phosphorescent tongue and an eye that looked backwards. Probably that eye also winked, for Dr. Oudemans includes both description and drawing under the heading of "Cheats and Hoaxes "a section sternly dealt with at the beginning of the book. However, in the next chapter, entitled "Would-be Sea-Serpents," the illustrations are not to be outdone, in spirit and conception, by mere cheats and hoaxes, and

in fig. 12, Lineus longissimus, Sow., we find something really worth looking at. Chapter iv. consists of reports and papers on the appearances of sea-serpents in various parts of the world. These are mostly compiled by naval officers, and a few-a very few-scientists. The Church, however, is not unrepresented, and we would not like to call in question the evidence of the Archbishop of Upsala, writing in 1555; but surely the Archbishop's illustration is the gem of the collection. The sea-serpent is depicted in the act of swallowing a sailor, and we can only charitably suggest that the original sketch was intended as a representation of Jonah's unfortunate experience. Among so much documentary evidence, it is difficult to discriminate critically. Even Milton is pressed into the service, quotations being given in "Reports
1893.
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mentioned as being the spe
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most reliable eye-witnesses).
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HANDBUCH DER PALEONTOLOGIE.
Zittel. Svo. Pp 304. Illustram
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